CHAPTER 16

C and C++

THIS CHAPTER GIVES A FIRST introduction to programming MySQL applications with the programming languages C and C++. In particular, we will introduce the client libraries for C and C++, that is, libmysqlclient and Connector/C++ (formerly known as MySQL++). This chapter considers programming only under Unix/Linux, and not under Windows.

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The C Application Programming Interface

The C application programming interface (API) is the most elementary interface to MySQL. All other APIs, such as those for PHP, Perl, and C++, are based on the C API. Thus a knowledge of the C API will facilitate learning about the other APIs. The API functions constitute a component of the library libmysqlclient. Every C program that wishes to use MySQL functions must therefore have access to this library.

Please note that there are several versions of libmysqlclient in use: version 10 for MySQL 3.23.n, version 11 for the alpha and beta versions of MySQL 4.0.n, version 12 for the stable versions of MySQL 4.0.n, and finally, version 14 for MySQL 4.1.n. These libraries are largely compatible. Version 12 differs from version 10 only by some extensions that allow the new features of MySQL 4.0 to be used. This chapter is based on version 12, but because of the narrow range of difference, most of the information is valid for version 10 as well.

Assumptions

For developing C programs under Linux or a comparable Unix system, you will need, of course, the usual equipment, in particular, a C compiler (generally gcc) and the program make. Furthermore, all the necessary include and library files for compiling and linking must be installed. With many distributions (such as SuSE), certain packages must be installed as well, ending with -devel (e.g., glibc-devel). It might be a good idea to test out your installation by translating a very simple C program.

For the development of MySQL programs you will need, in addition, the MySQL developer files, consisting of include files and libraries. These files usually are located in the package MySQL-Devel-n. This chapter assumes that the developer files are located in the following places:

- Include files: /usr/include/mysql
- Libraries: /usr/lib/mysql

If these files are located elsewhere on your system, then the compile and link options will have to be changed accordingly.

Hello World

Perhaps a little program will help develop some intuition in the direction of MySQL programming with C. The following example assumes that the database mylibrary has been installed on the local computer (see Chapter 5). Furthermore, in the code you must change, in the function call mysql_real_connect, the user name ("root") and password ("XXX"). The code is documented to the extent that it should give at least some idea of what is going on. Details on the use of MySQL functions appear later, in the section on programming techniques.